

COVER LETTER

Wednesday, January 21, 2009

Rick Beauheim
Sandia National Lab
4100 National Parks Hwy.
MS1395
Carlsbad, NM 88220

TEL: (505) 234-0065

FAX (505) 234-0061

RE: WIPP/H-6bR

Order No.: 0812250

Dear Rick Beauheim:

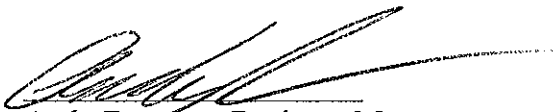
Hall Environmental Analysis Laboratory, Inc. received 1 sample(s) on 12/12/2008 for the analyses presented in the following report.

This report is an addendum to the report dated January 21, 2009. This is an updated report.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,



Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager



Hall Environmental Analysis Laboratory, Inc.

Date: 06-Feb-09

CLIENT: Sandia National Lab
Lab Order: 0812250
Project: WIPP/H-6bR
Lab ID: 0812250-01

Client Sample ID: H-6bR(C) -121008
Collection Date: 12/10/2008 1:47:00 PM
Date Received: 12/12/2008
Matrix: AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: SLB
Fluoride	ND	10		mg/L	100	12/12/2008 12:02:52 PM
Chloride	32000	100		mg/L	1000	12/15/2008 11:43:45 AM
Nitrogen, Nitrite (As N)	ND	20		mg/L	200	12/12/2008 1:12:32 PM
Bromide	36	10		mg/L	100	12/12/2008 12:02:52 PM
Nitrogen, Nitrate (As N)	ND	10		mg/L	100	12/12/2008 12:02:52 PM
Phosphorus, Orthophosphate (As P)	ND	50		mg/L	100	12/12/2008 12:02:52 PM
Sulfate	4000	50		mg/L	100	12/12/2008 12:02:52 PM
EPA METHOD 6010B: DISSOLVED METALS						Analyst: TES
Calcium	2000	20		mg/L	20	2/4/2009 6:45:36 PM
Magnesium	950	20		mg/L	20	2/4/2009 6:45:36 PM
Potassium	350	20		mg/L	20	2/4/2009 6:45:36 PM
Sodium	17000	500		mg/L	500	2/4/2009 7:09:56 PM
Strontium	30	1.2		mg/L	200	1/20/2009 1:16:44 PM
SM 2320B: ALKALINITY						Analyst: SNV
Alkalinity, Total (As CaCO3)	77	20		mg/L CaCO3	1	12/18/2008
Carbonate	ND	2.0		mg/L CaCO3	1	12/18/2008
Bicarbonate	77	20		mg/L CaCO3	1	12/18/2008
EPA 120.1: SPECIFIC CONDUCTANCE						Analyst: KMS
Specific Conductance	91000	0.10		µmhos/cm	10	12/18/2008
SM4500-H+B: PH						Analyst: KMS
pH	7.73	0.1		pH units	1	12/12/2006
SM 2540 C: TOTAL DISSOLVED SOLIDS						Analyst: KMS
Total Dissolved Solids	54000	2000		mg/L	1	12/16/2008

Qualifiers:
 * Value exceeds Maximum Contaminant Level
 E Estimated value
 J Analyte detected below quantitation limits
 ND Not Detected at the Reporting Limit
 S Spike recovery outside accepted recovery limits

B Analyte detected in the associated Method Blank
 H Holding times for preparation or analysis exceeded
 MCL Maximum Contaminant Level
 RL Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CATION/ANION BALANCE SHEET FOR WATER ANALYSES

HEAL LAB NUMBER	H-6bR(C)_121008 0812250-1									
CATIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sodium	17000	739.45								
Potassium	350	8.95								
Calcium	2000	99.80								
Magnesium	950	78.19								
Total Cations		926.39								
ANIONS	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L	mg/L	meq/L
Sulfate	4000	83.28								
Chloride	32000	902.68								
Bicarbonate (CaCO3)	77	1.54								
Carbonate (CaCO3)	ND	*								
Phosphate (P)	ND	*								
Nitrite (N)	ND	*								
Nitrate (N)	ND	*								
Fluoride	ND	*								
Bromide	36	0.45								
Total Anions		987.95								
Elect. Cond. (µMhos/cm)	91000									
CATION/ANION RATIO		0.94								
% Difference		3								
TOTAL DISSOLVED SOLIDS RATIOS										
TDS (measured)	54000									
TDS (calculated)	56382									
Ratio meas TDS:calc TDS		1.0								
Ratio Meas. TDS:EC		0.59								
Ratio Calc. TDS:EC		0.62								
Ratio of anion sum:EC		1.1								
Ratio of cation sum:EC		1.0								

* Analyte not detected (below method detection limit).

** Values below 0.55 can be obtained in waters containing appreciable concentrations of free acid or alkalinity, or not within pH 6 to 9. Values much higher than 0.7 are possible in highly saline waters.

GENERALLY ACCEPTED RANGES

Cation/Anion balance: 0-3 meq/L- 0.2 meq/L, 3-10 meq/L- 2%, >10 meq/L - 5%

Ratio measured TDS:calculated TDS – 1.0-1.2. Ratio Calculated TDS:EC – 0.55-0.7. Ratio Measured TDS:EC–0.55-0.7. Ratio of anion sum:EC – 0.9-1.1.

Ratio of cation sum:EC – 0.9-1.1

QA/QC SUMMARY REPORT

Client: Sandia National Lab
 Project: WIPP/H-6bR

Work Order: 0812250

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Method: EPA Method 300.0: Anions

Sample ID: MB		MBLK			Batch ID: R31619	Analysis Date: 12/12/2008 10:35:49 AM
Fluoride	ND	mg/L	0.10			
Chloride	ND	mg/L	0.10			
Nitrogen, Nitrite (As N)	ND	mg/L	0.10			
Bromide	ND	mg/L	0.10			
Nitrogen, Nitrate (As N)	ND	mg/L	0.10			
Phosphorus, Orthophosphate (As P)	ND	mg/L	0.50			
Sulfate	ND	mg/L	0.50			

Sample ID: MB		MBLK			Batch ID: R31638	Analysis Date: 12/15/2008 9:24:01 AM
Fluoride	ND	mg/L	0.10			
Chloride	ND	mg/L	0.10			
Nitrogen, Nitrite (As N)	ND	mg/L	0.10			
Bromide	ND	mg/L	0.10			
Nitrogen, Nitrate (As N)	ND	mg/L	0.10			
Phosphorus, Orthophosphate (As P)	ND	mg/L	0.50			
Sulfate	ND	mg/L	0.50			

Sample ID: LCS		LCS			Batch ID: R31619	Analysis Date: 12/12/2008 10:53:14 AM
Fluoride	0.5187	mg/L	0.10	104	90	110
Chloride	5.025	mg/L	0.10	101	90	110
Nitrogen, Nitrite (As N)	0.9935	mg/L	0.10	99.3	90	110
Bromide	2.611	mg/L	0.10	104	90	110
Nitrogen, Nitrate (As N)	2.618	mg/L	0.10	105	90	110
Sulfate	10.65	mg/L	0.50	106	90	110

Sample ID: LCS-b		LCS			Batch ID: R31619	Analysis Date: 12/12/2008 12:37:42 PM
Phosphorus, Orthophosphate (As P)	5.130	mg/L	0.50	103	90	110

Sample ID: LCS		LCS			Batch ID: R31638	Analysis Date: 12/15/2008 9:41:26 AM
Fluoride	0.4858	mg/L	0.10	97.2	90	110
Chloride	5.002	mg/L	0.10	100	90	110
Nitrogen, Nitrite (As N)	0.9517	mg/L	0.10	95.2	90	110
Bromide	2.613	mg/L	0.10	105	90	110
Nitrogen, Nitrate (As N)	2.531	mg/L	0.10	101	90	110
Phosphorus, Orthophosphate (As P)	5.191	mg/L	0.50	104	90	110
Sulfate	10.16	mg/L	0.50	102	90	110

Method: SM 2320B: Alkalinity

Sample ID: MB-R31701		MBLK			Batch ID: R31701	Analysis Date: 12/18/2008
Alkalinity, Total (As CaCO3)	ND	mg/L CaC	20			
Carbonate	ND	mg/L CaC	2.0			
Bicarbonate	ND	mg/L CaC	20			
Sample ID: LCS-R31701		LCS			Batch ID: R31701	Analysis Date: 12/18/2008
Alkalinity, Total (As CaCO3)	83.00	mg/L CaC	20	101	80	120

Qualifiers:

- E Estimated value
- J Analyte detected below quantitation limits
- R RPD outside accepted recovery limits
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: Sandia National Lab
 Project: WIPP/H-6bR

Work Order: 0812250

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
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Method: EPA Method 6010B: Dissolved Metals

Sample ID: MB		MBLK							Batch ID: R32035 Analysis Date: 1/15/2009 11:40:34 AM
Calcium	ND	mg/L	1.0						
Magnesium	ND	mg/L	1.0						
Potassium	ND	mg/L	1.0						
Sodium	ND	mg/L	1.0						
Sample ID: MB		MBLK							Batch ID: R32100 Analysis Date: 1/20/2009 1:00:26 PM
Strontium	ND	mg/L	0.0060						
Sample ID: MB		MBLK							Batch ID: R32298 Analysis Date: 2/4/2009 6:39:00 PM
Calcium	ND	mg/L	1.0						
Magnesium	ND	mg/L	1.0						
Potassium	ND	mg/L	1.0						
Sodium	ND	mg/L	1.0						
Sample ID: LCS		LCS							Batch ID: R32035 Analysis Date: 1/15/2009 11:43:36 AM
Calcium	47.44	mg/L	1.0	93.9	80	120			
Magnesium	47.78	mg/L	1.0	94.6	80	120			
Potassium	50.37	mg/L	1.0	91.6	80	120			
Sodium	50.34	mg/L	1.0	99.7	80	120			
Sample ID: LCS		LCS							Batch ID: R32100 Analysis Date: 1/20/2009 1:04:45 PM
Strontium	0.1014	mg/L	0.0060	101	80	120			
Sample ID: LCS		LCS							Batch ID: R32298 Analysis Date: 2/4/2009 6:43:16 PM
Calcium	49.25	mg/L	1.0	97.5	80	120			
Magnesium	49.64	mg/L	1.0	98.3	80	120			
Potassium	48.51	mg/L	1.0	88.2	80	120			
Sodium	48.69	mg/L	1.0	96.4	80	120			

Method: SM 2540 C: Total Dissolved Solids

Sample ID: MB-17866		MBLK							Batch ID: 17866 Analysis Date: 12/16/2008
Total Dissolved Solids	ND	mg/L	20						
Sample ID: LCS-17866		LCS							Batch ID: 17866 Analysis Date: 12/16/2008
Total Dissolved Solids	1009	mg/L	20	101	80	120			

Qualifiers:

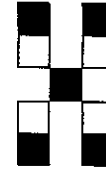
- E Estimated value
- J Analyte detected below quantitation limits
- R RPD outside accepted recovery limits
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits

CHAIN-OF-CUSTODY RECORD

QA/QC Package:

Std Level 4

Other: _____



HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: Sandia National Labs
(Michael Hilteshim)

Project Name: WIPP/H-6BR

Address: 4100 National Parks Hwy
Carlsbad, NM 88220

Project #: 98806/1.4.2.3

Project Manager: Richard Beankheim

Phone #: 575-239-0107

Sampler: Hilteshim/DeYonge

Fax #: 575-243-0061

Sample Temperature: 3
mbh 12-10-08

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative			HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO ₂ , NO ₃ , PO ₄ , SO ₄)	8081 Pesticides / PCB's (8082)	B260B (VOA)	8270 (Semi-VOA)	pH, TDS, cond, alk, NO ₂ +NO ₃ Cations/ Metals Strontium	Air Bubbles or Headspace (Y or N)
					H ₂ O ₂	HNO ₃	H ₂ SO ₄															
12/10/08	1347	H ₂ O	H-6BR(C)-121008	1/500mL	X			0812250									X				X	
12/10/08	1347	H ₂ O	H-6BR(C)-121008	2/125mL			X														X	
12/10/08	1347	H ₂ O	H-6BR(C)-121008	3/125mL		X																X
12/10/08	1347	H ₂ O	H-6BR(C)-121008	4/125mL		X																X
-	-	-	last sample	-	-	-																

Date: 12/11/08 Time: 1300 Relinquished By: (Signature) *[Signature]*

Received By: (Signature) *[Signature]* 12/12/08 900

Date: _____ Time: _____ Relinquished By: (Signature) _____

Received By: (Signature) _____

Remarks:
 • samples 3 & 4 are filtered
 • samples may contain high level of salts
 • 48-hr hold time for P

